A Review of Effective Teaching Model for Technical and Vocational Education and Training: Enhancing Skill Mastery among TVET Students

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ABSTRACT

Technical and Vocational Education and Training (TVET) plays a crucial role in equipping learners with relevant technical competencies in industry and employability skills. This review aims to identify and analyse effective models of teaching that enhance skills mastery among TVET students. Using a Systematic Literature Review (SLR) approach, 10 studies published between 2020 and 2025 were examined from reputable databases such as Scopus, ScienceDirect and Emerald Insight. The analysis revealed five dominant teaching models applied in TVET context which is Competency-Based Education and Training (CBET), Problem-Based Learning (PBL), Experiential Learning, Contextual Teaching and Learning (CTL), and Blended Learning. Findings indicate that effective teaching models share key elements including active learning strategies, integration of employability and soft skills, clearly defined learning objectives and competency outcomes, supportive instructor facilitation and continuous assessment and feedback for mastery. Among these, CBET emerged as the most effective model due to its direct alignment with Malaysia's National Occupational Skills Standards (NOSS) underscore performance-based assessment and job readiness. The study concludes that integrating multiple models, supported by continuous curriculum review, professional development and industry collaboration can optimized skills mastery and enhance TVET graduate's employability.

Keywords: Technical and Vocational Education and Training (TVET), Models of Teaching, Skills Mastery, Employability

INTRODUCTION

Technical and Vocational Education and Training play a vital role in bridging the gap between academic knowledge and practical skills essential for the evolving labour market. The continuous transition in global economy towards automations, digitalization and innovation-driven sectors has increase high requirements in effective teaching models within TVET (Illiescu et el., 2025). Effective models of teaching not only ensure the transfer of technical competency but also foster problem-solving, adaptability and employability skills that essential in a dynamic workforce (Abdullah et al., 2023). In Malaysia, the emphasis on TVET under the Pelan Pembangunan Pendidikan Malaysia (Pendidikan Tinggi) 2015-2025 reinforce the importance of outcome-based learning and learning aligned with industry that prepares students for real-world challenge and lifelong learning (Kenayathulla, 2021).

Teaching models in TVET have evolved from traditional lecturer-centered approaches to more student-centered approaches that prioritize hands-on experience and skills mastery (Noguera et al., 2024). Each model provides unique pedagogical strategies to enhance skills mastery, encourage active engagement and integrate theoretical knowledge with practical application. The diversity of teaching models becomes essential to evaluate and synthesize from existing literature to determine which teaching models most effectively enhance skills mastery among TVET students. This review analyse various teaching models implemented in TVET contexts focusing

in effectiveness in improving technical proficiency and employability.

This article review analyse effective teaching models identified across 10 studies focusing on elements that contribute to skills mastery among TVET students. This study aims to synthesize the main themes in effective teaching models which is active learning strategies, integration of employability and soft skills, clear learning objectives and competency outcomes, supportive learning environment and instructor facilitation, and continuous assessment and feedback for mastery.

The analysis emphasizes the importance of aligning TVET curriculum skills and knowledge with requirements and needs in industry. This alignment ensures that graduates possess the practical competencies demanded by industry. By systematically review past research, this study provides insights that can guide policymakers, educators, and employers in strengthening TVET delivery and ensuring alignment with industry expectations.

METHODOLOGY / MATERIALS

A systematic literature review (SLR) design approach was conducted to examine the existing journal article on the application and effectiveness of various teaching models within Technical and Vocational Education and Training (TVET). The purpose of this article review focused on identifying, comparing and discussing teaching models that have demonstrated effectiveness in enhancing skills mastery among TVET students across various disciplines and field such as engineering, automotive and construction. SLR design was selected due to its capability to comprehensively synthesize previous studies and providing in-depth insight to guide teaching and learning practices in TVET institutions. SLR also allows a structured, transparent and replicable process to gather, evaluate and integrate past research findings. Relevant academic literature were accessed through open search engines such as Google Scholar and ResearchGate. Article with restricted access were obtained via UTM Library Online Databases at e-Journals and e-Books. The academic databases provided reputable journal article from Emerald Insight, ScienceDirect and Scopus to retrieve relevant scholarly articles. Several combinations of keyword and term were used with Boolean operator such as (“Effective Teaching Model” OR “Model of Teaching” OR “Instructional Model” OR “Pedagogical Approach” AND “Technical and Vocational Education” OR “TVET” AND “Skills Mastery” OR “Practical Skills” OR “Employability”). The journal article also limited between 2020 and 2025, written in English, directly related to TVET education, peer-reviewed, conference papers or academic papers to ensure the relevancy. The journal articles collected were identified and analysed thoroughly using data extraction matrix to extract relevant data and information related to the topics and issues discussed in this article.

Table 1 presents a specific categorization of the Boolean search operators.

Table 1: Boolean Search Term and Components

Search Component	**Keywords**
Models of Teaching	“Models of Teaching” OR “Teaching Models”
Technical and Vocational Education Training	“Technical and Vocational Education Training” or “TVET”
Skills Mastery	“Skills Mastery” OR “Practical Skills” OR “Employability”
TVET Students	“TVET Students” OR “Technical Students”

The initial search produced total 39296 results which were refined to 1310 after sorting by relevance. Excluding articles published before 2020 and selected between 2020-2025 further reduces the number to 526. Through detailed screening of titles and abstract for relevance and focus, 70 articles were identified for full-text review. After applying inclusion criteria, 25 studies proceeded to quality assessment and ultimately 10 were selected for article review.

Table 2 presents a summary of the article extraction process outlining the progressing from the initial search to the final selection of 10 studies.

Table 2: Article Extraction Summary

Step	**Number of Articles**
Initial Search Result	39296
Sorted by Relevance	1310
Filtered by Year (2020-2025)	526
Title and Abstract Screening	70
Full Text Review	25
Final Selected Articles	10

Objectives

The objectives of this journal article review is:

1. To identify the various types of teaching models applied in TVET institutions.

2. To analyse an effective teaching models for the development of TVET student's skills mastery.

3. To synthesize the effectiveness of the models of teaching in the TVET context.

REVIEW OF PREVIOUS STUDIES

Models of Teaching in TVET

Strong teaching models in the education system form the foundation for effective knowledge delivery. The development of teaching models in TVET depends on the suitability of the skills subject and its application in theory-skills learning activities. This variety of teaching models aims to embed not only technical skills but also to cultivate and strengthen high-order thinking skills abilities required to become more adaptive with evolving workforce (Parker & Roumell, 2020).

Based on the previous studies, the primary models of teaching applied in TVET is Contextual Approach, Competency-Based Learning and Teaching (CBET), Problem-Based Learning, Experiential Learning dan Blended-Learning (Parker & Roumell, 2020; Masran et al. 2025; Hashim & Hamidon, 2022). The unique structure of the TVET curriculum compared to the STEM stream requires a pedagogical framework specifically designed to integrate technical skills with theoretical knowledge.

Contextualist Approach

One of the models of teaching in TVET is Contextualist Approach (Parker & Roumell, 2020). Contextualist approach emphasized learning in context-bound, historically situates and dynamically constructed through meaning-making. Furthermore, a functional contextual approach included integrating deliberate practice, mental simulation and reflective meaning-making beyond basic skill acquisition (Parker & Roumell, 2020). It is a robust, adaptable and human-centered foundation for mastery learning in TVET. The example of activities in contextual approach for TVET students included industry-simulated projects, industrial visit, authentic workplace simulations and industry scenarios that mirror real-world industry challenges (Schneider et al., 2022).

Competency-Based Learning and Teaching (CBET)

Moreover, another models of teaching that becomes a cornerstone of the TVET curriculum is Competency-Based Learning and Teaching (CBET) (Alainati, 2021). CBET is also known as outcome-based learning. The elements of CBET in TVET encompasses performance-based assessment and competency-based learning focusing on demonstrable outcomes rather than just theoretical knowledge (Manase and Nyamu, 2024). According to Masran et al. (2025), The implementation of CBET focus on mastering the actual skills required by industry. It evaluates student's level of competence through assessment formats that are clearly measurable and observable. This models of teaching is designed to ensure that learners acquire practical skills and ability to directly apply what they have learned to specific job roles. Hence, students are able to enhance their confidence and readiness for entry into the workforce. (Yusop et al., 2022). Manase and Nyamu (2024) also stated that CBET enhances communications and critical skills and hence reducing the skills gap between educational institutions and industry demands.

Blended Learning

Additionally, blended learning also is another prominent methods of teaching in TVET that integrates online learning especially digital media with traditional face-to-face methods to create a more flexible and engaging learning opportunities (Hashim & Hamidon, 2022). Blended learning enhances teaching quality by embedded digital literacy in learner's learning. This approach provided access to various digital resources that support both theoretical and understanding and practical application of vocational skills (Sun et al., 2025). Blended learning extensively helps the survivability of TVET education particularly during pandemic COVID-19 and post-pandemic that shift to online and hybrid learning (Hashim & Hamidon, 2022). The application includes synchronous method such as Zoom, Skype, Webex and Google Meet and asynchronous method such as Google Classroom, E-Learning, Whatsapp, Telegram or pre-recorded video lectures which enabling flexible access to educational content (Hashim & Hamidon, 2022; Suryaningsih et al., 2025).

Students have the flexibility to access course content anytime and anywhere to supports personal learning styles. Moreover, interactive tools enhances student's engagement such as digital multimedia, online discussions and collaborative projects activities which promotes active learning and develop critical thinking and problem-solving skills (Manditereza & Chamboko-Mpotaringa, 2024). However, (Manditereza & Chamboko-Mpotaringa, 2024) also stated blended learning can present challenges related to assessment difficulties, time management issues, infrastructure challenges especially in poor regions and issues with both lecturer and student's readiness in digital literacy.

Problem-Based Learning

Another prominent model is problem-based learning which engages students in real-world challenges relevant to their lives and communities which encourage them to apply knowledge and skills to solve complex problems (Masran et al., 2025). The integration of problem-based learning within TVET curriculum can significantly enhance critical thinking and problem-solving abilities and hence prepare students for dynamic workplace scenarios where expertise in specific skills were highly valued (Jumhur et al., 2024). The application of problem-based learning in TVET included the task project and problem project depends on their degree of problem and instructional scaffolding (Skov et al., 2023). For example, in automotive technology program, teacher assign students to diagnose and repair simulated vehicle malfunctions by applying theoretical knowledge of engine systems to practical troubleshooting.

Experiential Learning

Furthermore, experiential learning is a pedagogical strategy that focus on learning through direct experience that enables students to gain practical skills and deeper understanding of real-world applications within their chosen vocational fields (Quaye et al., 2025). It is based on Kolb's experiential learning cycle introduced by David A. Kolb in 1984 which involves concrete experience, reflective observation, abstract conceptualization and active experimentation in Experiential Learning Theory (ELT) (Quaye et al., 2025). This learning methods emphasized learning by doing, reflecting on real experiences and applying knowledge to a new situation.

The famous application under experiential learning broader umbrella is work-based learning (WBL). It is a structured form of experiential learning done in real workplace settings. Connection between theoretical knowledge and practical application were developed through internships, apprenticeships, job shadowing, cooperative education and industry-based (Matook et al., 2025). This allow students to immerse in hands-on and authentic industry experiences. It is vital for TVET students in enhancing their technical skills, employability and entrepreneurial readiness (Noguera et al., 2024). These experiences are crucial for bridging the gap between academic learning and industry demands, fostering adaptive skills necessary for rapid evolvement in labour marker.

RESULT AND DISCUSSION

Result

This section reports the key findings from the reviewed articles with a focus on effective teaching models that enhance skill mastery among TVET students. Insights were drawn from the 10 selected studies and organized into major thematic categories. Each effective teaching model is described below together with the specific articles that support it as summarized in Table 3.

Table 3: Effective Models of Teaching for Skills Mastery Among TVET Students

No.	Article Title	Models of Teaching	ffective Models of Teaching for Skills Mastery Among TVET Students				
			Active Learning Strategies	Integration of Employability and Soft Skills	Clear Learning Objectives and Competency Outcomes	Supportive Learning Environment and Instructor Facilitation	Continuous Assessment and Feedback for Mastery
1.	**A Functional Contextual Approach to Mastery Learning in Vocational Education and Training** Parker, D. A., & Roumell, E. A. (2020)	**Contextual**	/	/	/		/
2.	**The Effectiveness of Contextual Teaching and Learning (CTL) in Improving Cognitive Learning Outcomes on Bench Work Practice** Trilaksono, G., Huda, K., Khumaedi, M., Cahyanto, S. E., Kriswanto., & Setiyawan, A. (2025)	**Contextual**	/	/	/	/	/
3.	**The Impact of Competency-Based Training Towards Technical Skills Mastery Among TVET Students**	**CBET**	/	/	/		/

	Masran, S. H., Zulkiffle, M. H. I., Hasan, A., Yamaguchi, S. Y. & Marian, F. (2025)						
4.	**Influence of a Dynamic CBET Curriculum on TVET Graduates' Employability Skills** Nyamu, E. & Manase, G. W. (2024)	**CBET**	/	/	/	/	
5.	**Learning Beyond the Classroom: Exploring Tourism Students' Perception of Experiential Teaching Methodsn** Quaye, F. J., Kissi, M., & Hagan, P. (2025)	**Experienti al Learning**	/	/		/	/
6.	**Applying Experiential Learning Theory in Non-School-Based Technical and Vocational Education and Training for Unemployed Youths in South African** Mayombe, C. (2024)	**Experienti al Learning**	/	/	/	/	
7.	**Blended Learning in Technical and Vocational Education and Training (TVET) Training Institute** Hashim, N. & Hamidon, Z. (2022)	**Blended Learning**	/	/	/	/	/
8.	**Blended Learning Approach in TVET Colleges: Lecturers and Students Perceptions of Teaching and Larning Practical Subjects Online** Manditereza, B. & Chamboko-Mpotaringa, M. (2024)	**Blended Learning**	/			/	/
9.	**The Impact of Problem-Based Learning (PBL) on Student Achievement in Engineering Subject Material at Vocational College Kuantan, Pahang** Amiruddin, M. H., Sumarwati, S., & Amat, K (2021)	**Problem-Based Learning**	/	/	/	/	/
10.	**Problem-Based Learning for Shifting and TVET Electrical Engineering Lecturers' Practices: A Scoping Review** Mulaudzi, M. A., Teis, N. J., & Seleke, B. (2023)	**Problem-Based Learning**	/	/	/	/	
Frequency			**10**	**9**	**8**	**8**	**7**

DISCUSSION

This paper examines effective teaching models that support skills mastery among TVET students. By reviewing 10 relevant studies, it highlights key strategies that address opportunities and enhance learning outcomes within students. The following section discuss themes derived from the analysis and present practical recommendations

for strengthening teaching practices in TVET settings.

Effective Models of Teaching for Skills Mastery Among TVET Students

Active Learning Strategies

Active learning strategies has consistently emerged as an effective models of teaching for improving skills mastery among TVET students. Learners are actively engaged through hands-on practice, real-life projects and simulations. Quaye et al. (2025) stated that experiential learning improved learning and performance by connecting real-life scenarios and hence helping them understand how theory knowledge were applied in industry. Students learn by doing such as repairing engines, wiring circuits or designing prototypes. It focuses on building psychomotor, cognitive, and affective domain. The strategy must include ill-structured, authentic, contextual and open-ended to simulate real world scenarios (Amiruddin et al., 2021). Amiruddin et al. (2021) mention that problem-based learning fosters creative and critical thinking, encourages collaboration and communication, connects theory to practice and motivates self-learning. Students under PBL approach scored higher in practical test compared to those in conventional settings. Trilaksono et al. (2025) emphasized encourages student's motivation and engagement through contextual learning.

Integration of Employability and Soft Skills

Integration of employability and soft skills has proven to be an effective models of teaching in TVET. The emphasize related to non-technical skills such as communication, teamwork, problem-solving, adaptability and ethics. It integrated through collaborative projects, presentations, role plays, work-based learning and industry placements. It aims to produce holistic TVET students with good employability, job performance and long-term career growth. Trilaksono et al. (2025) stated that contextual learning improves employability by bridging classroom learning with industry needs which involves applications like tool use, production sequence and work safety. Nyamu and Manase (2024) emphasized that CBET strengthens employability by embedding essential soft skills such as teamwork, adaptability and communication within technical subjects. Similarly, Masran et al. (2025) highlighted CBET enhances technical mastery and also combines with employability attributes such as confidence, communication and project management. Moreover, Quaye et al. (2025) found out that experiential learning fosters both technical and soft skills particularly teamwork, communication and teamwork. This integration produces job-ready graduates capable to adapt with industrial environment. This integration emerges as a critical models of teaching for skills mastery

Clear Learning Objectives and Competency Outcomes

Every effective models of teaching has been identified must have define specific, measurable and skill-based objectives aligned with occupational standards. In TVET, learning outcomes were linked to industry competency framework particularly NOSS in Malaysia. It provides direction for both teaching and assessment to ensure all activities were aim toward skills mastery. Masran et al. (2025) highlights CBET promotes mastery in technical communication and drawing, project management and workshop safety due to its clearly defined learning outcomes and competency-based structure. Nyamu and Manase (2024) emphasized dynamic CBET with well-specified outcomes ensures that both technical skills are systematically developed. Mulaudzi et al. (2023) stated PBL framework focus on the importance of establishing a clear purpose and learning outcomes for each problem scenario introduced to students. These findings discover that effective models of teaching in TVET requires clear learning objectives as a backbone of its development and implementation. Clear learning outcomes also provide direction, structure assessment and strengthen feedback between teaching and industry expectations.

Supportive Learning Environment and Instructor Facilitation

Supportive learning environment and instructor facilitation represent effective models of teaching in TVET. Teachers act as facilitators, mentors and coaches which create a safe, motivating and industry-relevant environment. Instructors provide scaffolding, encourage teamwork and link classroom learning with workplace

expectations (Mulaudzi et al., 2023). Hashim and Hamidon (2022) discussed blended learning enhances teaching quality through the implementation of synchronous and asynchronous learning such as google classroom and telegram. Blended learning increase access to learning modules and embedded digital and lifelong learning skills, improves assessment practices and facilitates skill demonstration through multimedia tools. This supported by Manditereze and Chamboko-Mpotaringa (2024) that highlight blended learning for TVET students provides flexibility, enhanced engagement, improved accessibility, develop critical thinking, creativity and promotes problem-solving skills. Masran et al. (2025) found that CBET cultivated high mastery in technical skills through a structured and supportive learning process. This supported by Nyamu and Manase (2024) stated CBET encourage collaboration between trainers and industry partners where lecturers acts a s a facilitators that bridging classroom knowledge and real-word application. Supportive environment also means focus on emotional and cognitive dimensions of learning. Parker and Roumel (2020) stated contextual learning fosters deep learning when instructors acknowledge learner's knowledge by helping connect practical skills with meaning-making. Lastly, Amiruddin et al. (2023) demonstrated in PBL that facilitator-guided learning enhances student engagement, creativity and problem-solving ability in technical subjects.

Continuous Assessment and Feedback for Mastery

Continuous assessment and feedback for mastery has been validated as an essential component in effective models of teaching. Ongoing evaluation of performance must be in a timely and constructive feedback including practical performance tests, self-assessment and instructor observation. It helps learners identify their weaknesses earlier and improve until competency is achieved. Masran et al. (2025) highlight this iterative process of assessment and feedback enables students to monitor their skill progression and address specific weakness particularly in technical domains. Parker and Roumell (2020) emphasize that mastery learning framework should integrate reflective feedback loops to help learners strengthen knowledge through extensive practice and contextual reflection This could enhance high order thinking skills. It serve as diagnostic tools that reinforce students that prefer self-paced learning and autonomy. Nyamu and Manase (2024) underscored that continuous assessment helps aligns instructional delivery with industry standards by identifying performance gaps, provides teaching interventions and hence strengthen technical and employability outcomes.

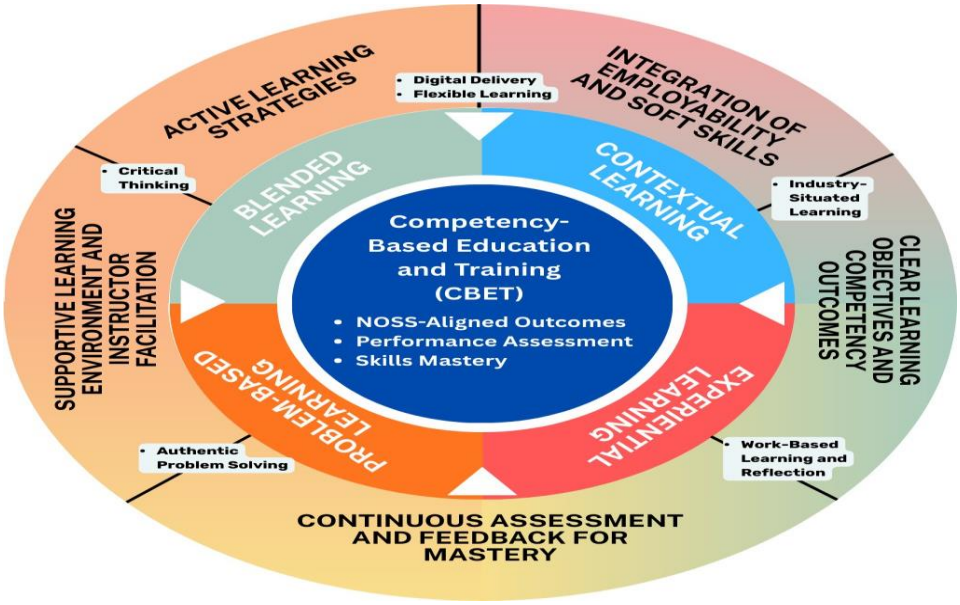

Figure 1 Integrated TVET Teaching Model

Advantages and Disadvantages

***i.* Advantages**

CBET has been shown to enhance student's technical competency while improving their confidence and job readiness (Masran et al., 2025). The alignment of CBET with industry demands ensures that graduates are work-ready, reducing skills mismatch and improving employability outcomes (Nyamu and Manase, 2024). The CTL

model also promotes deeper cognitive learning by connecting classroom content with real-world application. Engagement and motivation were increased through collaborative and hands-on task which bridges theory and practices (Trilaksono et al., 2025). Furthermore, PBL model applied for TVET students enhances problem-solving, critical thinking and teamwork skills (Amiruddin et al., 2021; Mulaudzi et al., 2023). Real-world problems in PBL foster creativity, self-directed learning and lifelong learning. Studies show that experiential approaches increase engagement, motivation and reflective learning while improving employment outcomes among TVET students (Mayombe, 2024; Quaye et al., 2025). Moreover, blended learning offers flexibility in skills mastery as it integrates conventional learning with digital learning tools. It improves access for students in remote areas and those with disabilities while embedding digital literacy and lifelong learning skills (Hashim & Hamidon, 2022; Manditereza & Chamboko-Mpotaringa, 2024). Blended learning enhances the quality and accessibility and ensures continuity of learning especially during disruptions such as COVID-19 pandemic.

ii. Disadvantages

Even though all the listed teaching models has most of the advantages, several limitations has identified. CBET reveals uneven skills mastery across technical domains and across programs (Masran et al., 2025). This show that every technical programs has an ununiform CBET implementation and coverage. This supported by Nyamu and Manase (2024) that stated differentiation in CBET implementation across program slow down the curriculum responsiveness to evolving technology. This highlight the need for continuous curriculum development to prevent skill gaps and relevance to industry needs. Furthermore, blended learning face limitation from infrastructure and accessibility from internet connectivity, high-cost devices and inconsistent student readiness (Hashim & Hamidon, 2022; Manditereza & Chamboko-Mpotaringa, 2024). This reduce effectiveness for online-practical integration in TVET institutions. Moreover, Manditereza and Chamboko-Mpotaringa (2024) stated lecturers often lack sufficient digital pedagogical training which leads to lower student's engagement and in assessing psychomotor skills in virtual environment. Moreover, PBL model relies heavily on lecturer's ability to guide self-directed learning and manage group process effectively (Amiruddin et al., 2021). This means that PBL becoming disorganized and ineffective for students with lack of preparation when lecturers were inadequate in training. In the perspective of experiential learning, it always face challenges with limited resources, trainer expertise and time-intensive process. Mayombe (2024) and Quaye et al. (2025) stated many TVET institutions lack access to equipment, space and industry partnership necessary for authentic learning experiences. The effect is low in student confidence to face challenges in industry and reduce work readiness. Lastly, contextual teaching and learning model limited in broader application as it is not widely applied in TVET due to underdevelopment in vocational pedagogy (Trilaksono et al., 2025). Parker and Roumell (2020) stated that contextual learning were complex and requires deep understanding which leads to slower learning pace and face conflict with period time and productivity-driven training programs.

Rationale Choosing CBET as effective Models of Teaching in TVET

CBET model of Teaching emphasizes individual progress through learning modules at their own pace to ensure mastery of each competency before advancing which is crucial for complex vocational skills (Manase & Nyamu, 2024). For example, students were required to demonstrate mastery of welding techniques through practical assessment against industry standards. This preferred models of teaching allows students to progress after they can successfully complete specific welding tasks to industry standards. Competency-based education directly measures and validates the attainment of predefined vocational skills (Mumba et al., 2023). The application of CBET in Malaysia refers to the competency standards set in National Competency Skills Standards (NOSS) by Department of Skills Development under the Ministry of Human Resources (MOHR). The NOSS outlines the required competencies, work activities and performance criteria for specific occupations in Malaysia. Most TVET curriculum programs in Malaysia were structured directly based on NOSS standards especially programs under the Malaysian Skills Certification System (SKM). In real practice, the course in TVET programs follows a specific NOSS code and the curriculum, assessment and learning outcomes were derived. Hence, students must demonstrate mastery of competencies outline in NOSS. Students must show they can perform a task according to the standard in order to obtain skills certification and pass every level. Polytechnics, community colleges and other training centres such as ILP, ADTEC and GiatMARA has been use NOSS-based CBET modules for teaching and assessment. Moreover, the trainers and assessors must be a certified individuals with PP-PPD

(Pegawai Penilai/Pegawai Pengesah Dalaman) credentials from DSD to ensure compliance with NOSS.

Contribution Of This Paper

This paper contributes to the advancement of teaching and learning practices in TVET. By systematically review various models of teaching such as CBET, PBL, EL, CTL and blended learning, this paper provides empirical and conceptual insights into how these approaches enhances skill mastery and employability among diverse TVET learners. This paper highlights the effectiveness of CBET in aligning training with industry requirements, ensuring job readiness and identifying curriculum gaps for continuous improvement. From this paper, PBL and experiential learning best practices in fostering critical thinking, creativity and real-world problem-solving skills which leads to cognitive development while contextual and blended learning models were helps in bridge classroom and industrial learning while promoting digital literacy, accessibility and lifelong learning. Furthermore, this paper guides policymakers, curriculum developers and educators particularly in designing adaptive and student-centred TVET curriculum that is responsive to evolution to industry and technologies.

Overall, this paper contributes to a more comprehensive understanding to enhance TVET quality, equity and relevance in preparing a skilled and ready students to workforce future.

RECOMMENDATION ON IMPROVING MODELS OF TEACHING

The recommendations outlined in this section are based on the key findings identified through the analysis. It is intended to support further development and foster inclusive learning environments that enhance TVET student's skill mastery and improve their employment opportunities.

a) Continuous Curriculum Review

TVET institutions should continuously update curriculum to address evolving industry needs and technological changes especially in areas with identified weak in skills (Masran et al., 2025). Moreover, models of teaching also should evaluate not only cognitive but also affective which are critical for holistic TVET outcomes (Trilaksono et al., 2025). The integration of blended learning as part of institutional development must be supported by structured models like ADDIE for design and evaluation (Hashim and Hamidon, 2022). For example, engine maintenance modules may be revised in collaboration with automotive industry partners to include electric vehicle diagnostics, hybrid powertrain systems, and digital troubleshooting tools. Lecturers can integrate blended learning by combining simulation software with hands-on workshop training. Meanwhile, student's assessment results and industry feedback from work-based learning are used to refine learning outcomes, assessment rubrics, and teaching strategies. This ensure that automotive courses remain aligned with CBET principles and evolving industry standards.

b) Embed Reflective and Transfer

The integration of PBL and EL should be expanded across TVET course to foster active learning, critical thinking and employability (Amiruddin et al., 2021; Quaye et al., 2025). Moreover, assessments should measure both procedural and reflective learning outcomes to evaluate deeper understanding and adaptive application of skills (Parker & Roumell, 2020). Moreover, educators should apply the contextualist framework to enhance meaning-making and transferability in vocational settings (Parker & Roumell, 2020).

c) Enhance Trainer Qualifications and Continuous Professional Development (CPD)

CPD programs should focus on pedagogical innovation, digital competence and industry exposure to improve teaching quality (Nyamu & Manase, 2024). Lecturers with strong industrial experience background are better in aligning instructions with industry requirements. Educators must receive training in facilitating PBL, blended learning and experiential learning as these models of teaching require high skills (Mulaudzi et al., 2023; Hashim & Hamidon, 2022). Lecturers also should be supported in mastering LMS to support inclusive education for TVET students Manditereza and Chamboko-Mpotaringa (2024). Lastly, instructors should engage in reflective teaching to share best practices in applying innovative TVET teaching models (Parker & Roumell,

2020).

d) Strengthen Industry Partnership Collaboration

Collaborations with industries should be deepened through internships and project mentorships to bridge the education-employment gaps (Nyamu & Manase, 2024). Moreover, from this collaboration should enhance field experiential components through workplace simulations and job placements Mayombe (2024). Industries and institutions should invest together in upgrading tools, digital infrastructure and practical equipment to support blended and experiential learning models (Quaye et al., 2025).

CONCLUSION

This article review emphasize the vital role of Models of Teaching in providing TVET students with high-quality education in term of theoretical knowledge and competency skills relevant to industry expectations and requirements. This article review also focus on crucial elements in teaching models in order to connect the practical learnt in the institutions with real-world industrial application. Through deep analysis of 10 previous studies, the researcher identifies a recurring elements in effective models of teaching for skills mastery in TVET student. Active learning strategies, integration of employability and soft skills, clearly defined learning objectives and competency outcomes, supportive instructor facilitation and continuous assessment and feedback for mastery emerge as crucial elements in TVET student's skills mastery.

Rapid development and implementation in teaching models also faces with challenges and limitations. The cost of tools and equipment, the lack of instructor's competency, ununiform implementation of teaching models framework across training, inadequate infrastructure and lack of accessibility in certain region and sectors. Continuous curriculum review, professional development and industry collaboration are the recommendation in improving models of teaching for the success of teachers and students. Hence, from this analysis in finding the effective models of teaching provides all the stakeholders in TVET system with deep understanding in developing comprehensive framework that leads to improvement of TVET education, skills mastery and competitive labour market.

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